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AUTHOR Kirkwood, Adrian
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ABSTRACT

The first of two papers in this report, "The Present and the Future of Audio-Visual Production Centres in Distance Universities," describes changes in the Open University in Great Britain. The Open University's use of television and audio materials are increasingly being distributed to students on cassette. Although transmission is still the main distribution method for television material, a large proportion of students record course programs off-air for viewing at a more convenient time. Programs in recorded form offer students more opportunities to control and interact with the material and thereby improve the depth and quality of their learning. Potentially, the quality of distance education in Europe could be enhanced through greater use of audiovisual materials, but it would require collaboration between institutions. The second paper, "The Demands of an Information-Conscious Society on a National Distance Teaching University," discusses the potential of new technologies in distance education to contribute both to the production and dissemination of information and to the development of skills for handling, interpreting, and using information. The implications of electronic publishing for the preparation and delivery of distance teaching materials are considered, as are the roles of audiovisual and computer-based materials in helping people make sense of information. The advantages and problems of home computing in the Open University are discussed, including the potential of computer mediated communications to improve dialogue in distance education. (10 references) (Author/DB)

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Programme on Learner Use of Media

The Programme on Learner Use of Media has been established to develop an understanding of students' use of and learning from combinations of educational media (both current and anticipated) in distance education. Our specific aims are:

> To maintain and improve the quality of teaching and learning being carried out through combinations of media in the University.
>
> To ensure that the University maintains an appropriate balance between media with respect to teaching effectiveness, learners' strategies for media use, the logistics of use and relative costs.
>
> To develop a knowledge base to support research and policy making in respect of media use.

Members of PLUM are:

Diana Laurillard	(3311)
Beryl Crooks	(2606)
Adrian Kirkwood	(2401)
Josie Taylor	(5965)
Mary Taylor	(2088)

Secretary: Hansa Solanki (2909)

The Present and the Future of Audio-Visual Production Centres in Distance Universities,

and

The Demands of an Information-conscious Society on a National Distance Teaching University.

Papers presented at a conference on 'Audio-Visual Media and New Technologies at the Service of Distance Education' held at the Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain, in May 1991.

ABSTRACT

The first paper briefly describes changes in the Open University's use of television and audio materials, which are increasingly being distributed to students on cassette. Although transmission is still the main distribution method for television material, a large proportion of students record course programmes off-air for viewing at a more convenient time. Programmes in recorded form offer students more opportunities to control and interact with the material and thereby improve the depth and quality of their learning. Potentially, the quality of distance education in Europe could be enhanced through greater use of audio-visual materials (adopted, adapted or co-produced), but it would require collaboration between institutions.

The second paper discusses the potential of new technologies in distance education to contribute both to the production and dissemination of information and to the development of skills for handling, interpreting and using information. The implications of electronic publishing for the preparation and delivery of distance teaching materials are considered, as are the roles of audio-visual and computer-based materials in helping people make sense of information. The advantages and problems of 'home computing' in the OU context are discussed, including the potential of computer mediated communications to improve dialogue in distance education.

Text also available in Spanish

The Present and The Future of Audio-Visual Production Centres in Distance Universities.

The Current Situation at the UK Open University

Almost every course offered by the UK Open University (UKOU) includes audio-visual materials produced by the Open University Production Centre of the British Broadcasting Corporation (BBC) or by the university's Audio-Visual Services. The vast majority of the audio-visual materials are prepared for students to study in their own homes, although some have been produced for use by students at residential schools. Television materials are transmitted nationally by the BBC or mailed to students on video-cassette, while audio materials are distributed on audio-cassette or broadcast as radio programmes by the BBC. Media producers are members of the course teams that prepare all teaching and learning materials for undergraduate, postgraduate and continuing education courses and packs.

The UKOU has more students than any other British university, with students distributed throughout the whole country (and beyond). Audio-visual media have always played an important role in its teaching. For courses with large student numbers, broadcast television and radio programmes offer an economic means of providing home-based learners with important educational experiences that are difficult or impossible to achieve in any other way. However, broadcasting has some disadvantages: the inconvenience of certain transmission slots creates problems of access for some students and for courses with small student numbers transmission ceases to be cost-effective. For many years the UKOU has been exploring ways of making available to students recorded forms of audio-visual teaching materials. By 1980 audio-cassettes had largely replaced radio transmissions and a number of pilot schemes had been established to provide additional forms of television material. More recently, a reduction

in the amount of 'good' television air-time available to the university has coincided with a national trend for widespread acquisition of domestic video-cassette recorders. In 1988 more than three-quarters (77%) of UKOU undergraduate students had a video-cassette machine at home (Crooks & Kirkwood, 1989) and current access is likely to be in excess of 85%. Very many students use video equipment for *displacement viewing*, i.e. recording course programmes off-air for viewing at a more convenient time.

For a number of reasons, the UKOU has also increased the amount of television material distributed on video-cassette. For courses with fewer than about 650 students per year, it costs less to distribute programmes on returnable video-cassettes than to transmit them. For many short courses and packs, television material is made available on video-cassette for students to use when most convenient or suitable for their studies. However. broadcasting is still the primary means of distributing UKOU television programmes, with about ten times as many viewing hours being broadcast as are made available to undergraduate students on video-cassette, although for Continuing Education courses and packs the proportions are almost reversed.

Currently, a number of course teams are choosing to design television material for distribution only on video-cassette, enabling them to exploit the educational potential that cannot be realised by broadcasting (see Crooks & Kirkwood, 1988). Video-cassettes give students more opportunities to control and interact with television material, allowing them to improve the depth and quality of their learning (for example, analysing and/or evaluating primary sources or 'real life' phenomena) and to achieve greater integration with other aspects of their studies. Now more than ever, it is necessary to distinguish between *television material* and *the means by which it is distributed*, because a range of media technologies makes it

possible for the visual and aural messages combined in television material to be conveyed to an audience by one or more distribution method (e.g. video-cassette, cable, satellite, etc. as well as terrestrial broadcasting).

Following recent changes in the university's guidelines for the allocation of television resources, which have attempted to uncouple educational from economic considerations in respect of production and presentation styles, I have predicted (Kirkwood, 1990) that in the near future UKOU television material will be produced in two distinct but closely related forms: broadcast format and video format. Each will have its own educational rationale and functions and will not be tied to a particular means of distribution. Whether received off-air by means of terrestrial or satellite broadcasting or mailed on video-cassettes, the most exciting feature of UKOU television in the 1990s will be its increased potential to enhance students' learning.

The UKOU has already produced several Interactive Videodiscs, but these can only be studied at residential schools as replay equipment is too expensive for widespread domestic access. Although it is likely that course materials will be developed using other emerging audio-visual technologies (such as Digital Video and Compact Disc Video), these will remain on an experimental basis in the foreseeable future due to the high costs of development and the problems of student access.

The UK Open University in Europe from 1992

From 1992 any resident of the European Community will be able to register for courses offered by the UKOU, as access will no longer be restricted to UK residents and those in other countries enrolling under special schemes. The university is currently considering how best to deliver course materials and provide tutorial support for students dispersed throughout Europe. Although audio-cassettes are of a standard international format and replay

equipment is inexpensive and widely available, the provision of televisual materials is of particular concern. This is due to differences between European countries not only in terms of technical standards and systems, but also in respect of access to suitable equipment for receiving and/or replaying programmes or sequences. It is clear that for the next decade at least, there will be no single *super medium* capable of distributing televisual material to home-based students throughout Europe. It makes sense, therefore, to consider a variety of means by which television material can be delivered to students; for example, programmes for a particular course might be broadcast (terrestrially) in the UK, sent on video-cassette to students in another EC member country, relayed over cable in another, etc.

Audio-Visual Media in European Distance Education

It appears that print is still the dominant medium of instruction in distance education throughout Europe (see, for example, Bates, 1990), but where audio and/or television materials are used, they usually enhance the teaching effectiveness of courses and the learning experience of students. The media that can be used for courses intended for home-based learners will remain restricted by the availability of distribution mechanisms (national and trans-national) and domestic access to media technologies. These vary from country to country - for example, cable TV is widely available in Belgium and the Netherlands, while home ownership of video-recorders is high in the UK and Germany, but low in Italy and Greece, etc. Thus developments in media use by any institution will reflect the local circumstances. However, the means of distribution can influence the educational experience available to students, providing greater or lesser opportunities for them to control and interact with the audio-visual materials (for example, recorded materials have greater potential for interactive learning than ephemeral broadcast programmes). Where

teaching materials are designed for delivery to local study centres, residential schools, etc., there is the potential for a greater variety of media technologies to be used.

By whatever means audio-visual materials are distributed to students, it is likely that the production costs will remain greater than the delivery costs. Media that are considered to be too expensive for an individual distance teaching institution may become economically viable if jointly used by several institutions in different countries. This would entail, however, a greater commitment to improving the educational effectiveness of course materials through the use of audio-visual media (see, for example, Bates, 1988) and the development of new mechanisms for collaborative working between institutions. If audio-visual materials were adopted, adapted or co-produced to a much greater extent than they are at present in European distance education, there is a possibility that they may become more central to the process of teaching and learning.

In conclusion, I consider that developments in audio-visual media production for distance education should not be 'technology led', but should embrace the desire to enhance the educational effectiveness of teaching and learning. Through co-operation and collaboration we should strive to widen and extend the use of existing audio-visual media by European distance teaching institutions. We should seek to increase learners' control and interaction with audio-visual teaching materials, promoting them to a more central role in distance education.

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The Demands of an Information-conscious Society on a National Distance Education University.

Introduction

There is a widely held view that we are living in a remarkable era in terms of new technologies and the opportunities they provide for storing, distributing, updating, handling and presenting information. The challenge for distance teaching universities is to provide opportunities for people to learn how to make sense and effective use of the vast amounts of information that are being made available. People may make a variety of educational demands depending upon their particular situation and circumstances. For example, the needs of young adults seeking initial education or training will differ from those wanting professional updating or retraining: the former group will need to develop intellectual skills and ways of understanding to a greater extent than the latter group, for whom the acquisition of up-to-date information may be of primary concern.

In distance education new information technologies can contribute both to the production and dissemination of information and to the development of skills for handling, interpreting and using information. Some of the possibilities are discussed below.

Electronic Publishing of Text Materials

The technology for electronic publishing is already having a major impact on distance education, as it has the potential to make significant changes in both the origination of texts and the delivery of teaching/learning materials. The process of producing printed texts can be accelerated if all (or most) stages are undertaken electronically, from authors' draft to finished product. The updating and revision of materials can also be achieved more quickly and cheaply when compared with traditional printing methods.

Technically, it is becoming possible to electronically deliver text materials to students, omitting the stage of printing 'hard copies'. Texts can be distributed on floppy disks or via the telephone system and a modem for students to read from the screen of a microcomputer or to print out on their own equipment. However, printed text retains a number of advantages over screen or home printed text: it is portable, can include high quality illustrations and graphics and is easier to use by learners in terms of reading, skimming searching and reviewing. New forms of access can be made available in special circumstances, e.g for blind or partially-sighted students, electronic text from a CD-ROM source can be accessed using a microcomputer with a voice synthesizer in order to read selected passages aloud.

Audio-visual Materials

Audio and television can be used to provide information that would be difficult to present in any other way, for example aural or visual source materials such as extracts of foreign languages or the movement of mechanical structures under stress. Lectures and demonstrations can reach a larger and/or more widely dispersed audience if distributed by means of audio-visual media, for example on audio-cassette or by tutored video instruction (TVI). However, audio-visual media are also of particular value in increasing learners' ability to analyse and evaluate complex or ambiguous information and to apply 'abstract' principles and theories to real phenomena or situations. Television, in particular, can enhance distance learning through the presentation of concrete examples of abstract ideas, principles or processes (Bates, 1988). In fact, it could be argued that audio-visual media can be less effective than some other media in terms of simply *providing* information, but they have greater potential for helping *make sense* of information.

Computer-based Technologies

There is currently a considerable amount of research and development activity being undertaken in respect of educational applications of computer-based technologies. However, it seems unlikely that in the foreseeable future distance teaching universities will be able to make widespread use of these developments for home-based learners, due to restricted domestic access to new technologies. Nonetheless, there is potential for teaching/learning materials that are designed to be used at the workplace, in local centres or at residential schools where problems of access may be easier to overcome. Resources that may supplement other teaching materials in this way include databases on Compact Disc (CD-ROM) that can be searched and accessed as the learner desires and Interactive Videodiscs (IV) that link video sequences with computer-based instruction.

Computers may be used more generally in a student's home or place of work for three main purposes:

(i) for learning about practical aspects of computing and/or information technology (where computing or IT is the subject being studied)

(ii) as an educational tool (for running computer assisted learning packages or using pre-existing software for word processing, data analysis, access to databases, etc.), and

(iii) for communications with teaching staff and other students.

Recent developments at the UKOU demonstrate the potential and problems of 'home computing'.

Home Computing at the UK Open University

In 1988 the UK Open University (UKOU) introduced a Home Computing Policy in order to provide greater opportunities for the integration of

practical computing activities within it teaching. Students taking specified 'home computing' courses are responsible for arranging their own access to an industry standard microcomputer (IBM PC compatible). The university established special schemes to enable students to purchase or hire equipment of a suitable specification. Some students make alternative arrangements, for example using equipment at their place of work, etc. Over 4,000 students enrolled on the three specified courses in 1988 - by 1990 the number of courses had increased to seven with a total of 13,500 students. All courses coming under the policy include practical computing activities as an essential element of students' coursework: some teach *about* computing and/or information technology (e.g. *Fundamentals of Computing*), while others teach *with* the computer as an educational tool (e.g. the *Technology foundation course*). A second phase of the Home Computing Policy is being introduced, in which there will be an increasing number of courses that use the computer as an educational tool.

These 'home computing' courses have provided many students with their first experience of computer use: the *Technology foundation course* in particular has been very successful in teaching novices many of the basic skills for using a computer. However, there are concerns that some students may be deterred by the requirement to acquire and use a computer and that this may serve to reinforce existing divisions within society, especially in relation to income and gender (Kirkwood and Kirkup, 1991).

In addition to the required use of computers for the study of 'home computing' courses, there are a large proportion of UKOU students who have access to equipment suitable for educational purposes. In 1988 more than 23% of students taking undergraduate courses that were not included in the Home Computing Policy had a microcomputer at home, while a further 14% could arrange access elsewhere (Kirkwood, 1990). Nearly half of

those students with computer access had already used the equipment in their university studies.

As well as the stand-alone use of personal computers for study purposes, students taking one of the home computing courses participate in computer mediated communications. Home computers are linked by a modem and the public telephone system to a UKOU mainframe computer, enabling students not only to download and upload data, but also to communicate with one another and with tutorial staff (Mason, 1988). Although there are a number of disadvantages in terms of costs and access, the potential contribution of computer mediated communication to distance education is very great. It allows dispersed learners and teachers (possibly in more than one country) to communicate in ways that are more open-ended and less didactic than is usual in other forms of distance education.

In conclusion, the range of technologies available for educational purposes continues to expand, but for those in distance teaching universities the main issue remains how we can use the technologies available to our students to satisfy their learning needs.

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Programme on Learner Use of Media

This paper is included in the Programme's

ANNOTATED BIBLIOGRAPHY OF EDUCATIONAL MEDIA

which is available on-line from the IET server.
Printed copies, or copies on computer discs of various formats are available from Hansa Solanki in IET (ext: 2909)

The bibliography with abstracts is large (almost 300 items). The following is the list of contents showing the sections under which papers have been organised. You may order either the whole bibliography or a selection of individual sections.

A- BROADCASTING
- (1) Broadcasting Policy:
  - (1a) Allocation of Resources
  - (1b) Use of Video vs Broadcast
    - (i) Broadcast and Video Access Backup Schemes
  - (1c) Radio
  - (1d) Cable and Satellite
  - (1e) European Policy
- (2) Broadcasting Evaluation
- (3) Specific Broadcasting Issues:
  - (3a) Transmission Times
  - (3b) Setting Assignments on Broadcast Material
  - (3c) Using Broadcast Material
  - (3d) Case Studies and Documentaries
  - (3e) 50 minute Broadcast Programmes
- (4) Broadcast Surveys and Annual Surveys of New Courses
- (5) The Open University/BBC relationship

B-MULTI-MEDIA AND COURSE DESIGN
- (1) The Open University Experience
- (2) New Technology and Course Design
- (3) Using Multi-media

B1-RADIO AND AUDIO
- (1) Policy Issues Related to Radio
- (2) Characteristics of Radio and Course Design
- (3) Analysis of Radio
- (4) Using Radio
- (5) Audio Vision
- (6) Audio-cassettes

B2- TELEVISION
- (1) Policy issues related to Broadcast TV
- (2) Characteristics of Television and Course Design
- (3) Analysis of Television
- (4) Using Television

B3-VIDEO
- (1) Video and Broadcast Television
  - (1a) Broadcast and Video Access Backup Schemes
- (2) Characteristics of Video and Course Design
- (3) Analysis of Video
- (4) Using Video

B4-TEXT
- (1) Design and Use of Broadcast notes
- (2) Text processing
- (3) Design and Use of Texts in Distance Education

C-COMPUTING AND COMMUNICATIONS TECHNOLOGY
- (1) Computing or Communications?
- (2) Computers

(2a) Access
(2b) Home computing evaluation project
(2c) Effect of computing on particular groups
(2d) Computer Assisted Learning (CAL)
(2e) Hypertext

(3) Communications
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(3b) CEEFAX/TELETEXT

(4) Multimedia Systems

C1-INTERACTIVE VIDEO
(1) Characteristics of Interactive Video
(2) Analysis of Interactive Video
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C2-CABLE AND SATELLITE
(1) Cable TV
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(3) Satellites in Europe (and JANUS project)
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C3-CYCLOPS
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D1-EVALUATION
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D2-STUDENT USAGE
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D3-RESEARCH METHODOLOGY
(1) Evaluation in Distance Learning Systems
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(3) Approaches to Research
(3a) Decision Oriented Research
(3b) Formative and Summative Evaluation
(3c) Developmental Testing of AV Material
(3d) Contextual Evaluation
(3e) Survey Methods
(3f) Protocol Analysis
(4) Investigating Learning from Media
(5) Research Support

D4-RESEARCH PLANS OF AVMRG/PLUM
(1) AVMRG
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D5-OTHER INSTITUTIONS
(1) Consultancies on Policy, Organisation and Evaluation
(2) Use of AV Media in Other Institutions
(3) Reports on visits/workshops and conferences

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